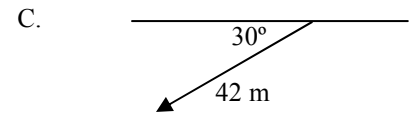# 2008 Two Dimensions 4
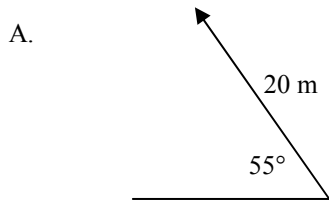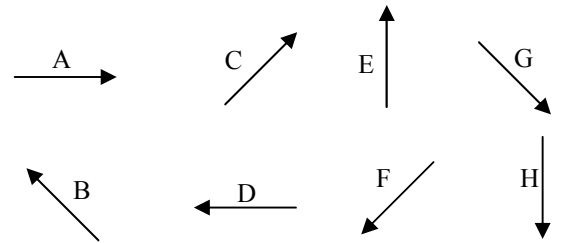
1. Resolve the following vectors into their components. Remember to use the correct direction.

A.

20 m

55°

B.

15 m

C.

30°

42 m

2. Use the vectors at the right to answer the following.
    A. _____ A person walks the 2C, then D, then G, then -2A (opposite direction of A twice). Draw this crazy path below.

A

C

E

G

B

D

F

H

B. A second person, standing at the same starting point, walks to the first person in a straight line.   Use an arrow to show this second person. Mark the arrow "R" for resultant. (*On the same diagram above.*)

V_2

V_1
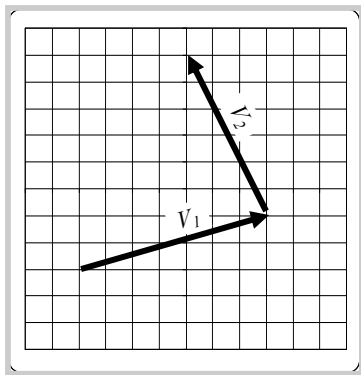
3. Add these vectors together. Assume each square = 1 m.
    A. $X_1 =$ B. $Y_1 =$

    C. $X_2 =$ D. $Y_2 =$
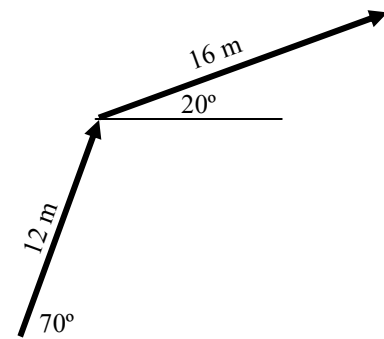
    E. $X_{total} =$ F. $Y_{total} =$

    G. Using Xtotal and Ytotal as the two sides
        of a triangle, draw R at the right.
        (R will be the hypotenuse.)
    H. Calculate R's magnitude.
    I. Calculate R's direction.

4. Following the "Adding Vectors" EXACTLY, add these two vectors together.
    (*And no "I don't get it" excuses!*)

16 m

20°

12 m

70°

Use the example on the back of the "Projectile Motion" notes to answer the following.
(*This is worth 20 points. All you have to do is follow the steps EXACTLY*
—use the same equations, just change the numbers)

5.   A cannon fires a cannonball at angle of 50º to the ground at a velocity of 75 m/s.
     What is the range of the cannonball?